

Wave-fans and Wave-fans with Heat Sinks

Abstract

A wave-fan comprises a wavy surface, generally sinusoidal in the direction of rotation, which rotates in close proximity to the fins of a heat sink. The wave-plane fan is suitable for use with a flat heat sink, and a wave-ring fan is suitable for use with a cylindrical heat sink. There are no airfoils as in a prior art fan. Instead, the ridges of the wave-fan agitate the air between the fins of the heat sink as each ridge passes, breaking down the boundary layer and effecting good heat flow into the air. In some embodiments of the wave-fan, the outer surfaces are smooth, so it is not a hazard to intruding fingers, so in many applications it may be used without a guard or enclosure. Incidental centrifugal force provides some airflow through the fan to transport the heated air away from the fan. Also, the configuration of the fan tends to keep contamination in the air out of the heat sink fins, so an inlet air filter may not be needed. Because the net airflow through the fan is low, less power is required and it is very quiet.